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GerbTool ™

Version 15.0

Getting Started

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18) Attorneys' Fees. If either party breaches any term of this EULA, then the other party shall be entitled to recover all expenses of whatever form or nature, costs and attorneys' fees reasonably incurred to enforce the terms of this EULA, including such costs or fees as may be awarded in arbitration or by a court at trial or on appeal. In addition, in the event either party to this EULA becomes a debtor subject to the United States Bankruptcy Code, the non-debtor party shall be entitled to recover any expenses, costs and fees, including attorneys' fees, incurred in connection with enforcing its rights against the debtor party, whether those rights arise under this contract or involve matters arising solely under the Bankruptcy Code.

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22) Jurisdiction, Venue. THE PARTIES AGREE THAT ANY SUIT, ACTION OR ARBITRATION PROCEEDING ARISING OUT OF OR RELATING TO THIS EULA SHALL BE BROUGHT IN MULTNOMAH COUNTY, OREGON, AND THE PARTIES EXPRESSLY CONSENT TO THE PERSONAL JURISDICTION OVER THEM OF ANY STATE OR FEDERAL COURT IN MULTNOMAH COUNTY, OREGON.

23) Paragraph Headings. All paragraph headings in this EULA appear for convenience of reference, and shall not affect the meaning or interpretation of the EULA.

24) Amendments. This EULA may be amended or modified only by a written instrument executed by the parties which expressly states the intent of the parties to modify or amend this EULA.

25) Entire Agreement. This EULA constitutes the entire agreement between the parties pertaining to the subject matter of the EULA and supersedes all prior discussions, negotiations, understandings, representations and agreements, whether oral or written. All terms of this EULA are contractual and not mere recitals.

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About GerbTool

GerbTool provides CAD/CAM professionals with the tools they need for complete control over their PCB data. It includes a feature-rich data editor for ensuring a seamless link between PCB design and manufacturing. From visual verification to high-level data analysis, GerbTool simplifies and automates your PCB post-processing tasks.

- GerbTool's intuitive graphical user interface, Navigator, toolbars, and hotkeys allow you to focus on accomplishing tasks quickly and efficiently, rather than on the technical details of operating the software.
- The Import Wizard takes the guesswork out of importing your databases.
- Automated tools, such as the Solder and Paste Mask Generators/Optimizers, Advanced Panelization, and Graphical Netlist Comparison, reduce your time-to-market and costs.
- A full suite of Analysis tools are combined into a single, checklist-style flow for increased throughput and data quality.

System Requirements

The following minimum system configuration is required for running and installing GerbTool.

- IBM PC compatible with at least a 1GHz Pentium CPU.
- Windows 2000, XP or later.
- For best graphics display, a 17" or larger monitor with at least 1280 x 1024 resolution is recommended.
- At least 512 megabytes (MB) of RAM and 30 MB of hard disk space.

Technical Support

If you purchased GerbTool from an authorized reseller, you should contact them directly for technical support as they will have a better understanding of your needs and intended uses of the software.

If you are unable to get satisfactory assistance in solving your problems, you may contact WISE Software Solutions using the following methods:

- Check our web site at http://www.gerbtool.com for up-to-date FAQ's with video demos, as well as access to the GerbTool User Forum.
- Send technical questions by e-mail to tech@wssi.com. Send license requests to licenses@wssi.com.
- Send a FAX message to (503) 554-1220.
- Call (503) 554-8855 between the hours of 8:00 A.M. and 4:00 P.M., Pacific Time.

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Software Installation

The type of software installation you perform depends upon the type of license you have purchased. If you purchased a license with a hardware key, *do not* attach the key prior to installing the software.

The installation of GerbTool software requires administrative privileges. The installation software will check your user account during the setup process to determine if you have sufficient privileges.

1. Insert the GerbTool CD into your CD ROM drive. The installation process starts automatically. Follow the instructions displayed on the screen.
2. When you come to the Select Type dialog box, you must select an option based upon the type of license you purchased:
 - If you purchased a single nodelocked license, or are installing the software on a network version client computer, select the Nodelocked/Network Client option.
 - If you purchased a single hardware key license, select the Hardkey option.
 - If you purchased a network license and are installing the software on the license server, select Network Server option. You are then presented with options to customize the installation. The required features of a license server setup are the License Manager and Network License Server. Installing the GerbTool program on the server (the Program option) is recommended, but not required. If you purchased a network license that is controlled by a hardkey, select the Hardkey option.
 - The GerbTool Database Viewer (GT-dbV) is a free product that is used to view GerbTool .gtd files. If you purchased another GerbTool bundle, it is *not* necessary to install GT-dbV. You may, however, install GT-dbV on any computer that you or an associate may wish to use for viewing GerbTool databases.
3. Follow the remaining instructions displayed on the screen.

The WISE License Manager provides you with tools to manage one or more WISE Software licenses. Follow the license activation instructions for the license you have purchased.

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Activate a Nodelocked License

A nodelocked license is a single software license, which can only be run on a particular computer. An Activation Code enables the license.

⚠ *If you installed the free GerbTool database viewer (GT-dbV), you do not need to request an Activation Code. After installing GT-dbV, simply execute the program from the Start menu or desktop icon.*

In order to afford some protection from potential improper use, only one-year licenses are issued. The license is not linked to maintenance and will be renewed perpetually. If you find your license has expired, please request a new activation code. If you wish to obtain a license that does not expire and allows you to move the license from one machine to another, a hardkey license offers this flexibility.

1. After performing a Nodelocked installation, start GerbTool. It will open in Demo mode, and display a message box with an opportunity to immediately request an activation code.
2. To request an activation code, click the Request Activation Code button.

 -or-

 If you click OK, you can request an activation code at any time by selecting the Help|Request Activation Code command.
3. The License Activation Request Wizard appears. Click the Next button.
4. Your name, e-mail address, serial number, phone, and fax are required to receive an Activation Code. Complete the Registration Information, and click the Next button.
5. If you have any additional information that you would like to add to the license request, type it in the Notes field, and click the Next button.
6. Indicate whether you want your license request sent directly to WISE Software by e-mail (preferred), printed on your default printer, or saved to a Text file.

 If you cannot send your request or receive the Activation Code by e-mail, please contact WISE Software technical support at 1-503-554-8855 for instructions.
7. Click the Next button. Depending upon the method you chose, our request is either sent by e-mail, printed, or you are prompted to select a file name for your text file. A confirmation message appears.

 If you sent the request by e-mail, you are finished. If you experience any problems sending your request using this method, we recommend starting the wizard again, saving the request to a text file, and sending it as an e-mail attachment.

 If you saved the request to a .txt file, you can attach the file to an e-mail message addressed to licenses@wssi.com.
8. WISE will send an e-mail reply with the Activation Code as a .wlac file attachment. Double-click on the .wlac file in the e-mail. If your e-mail program asks you what you wish to do with the file, tell it to open the file.

 If you experience any problems when you double-click on the attachment, try saving the attachment to a folder. Then open the License Manager by selecting Programs>WISE Software>License Manager from the Windows Start menu. Select the Activation tab. Click the Browse button next to the Filename text box, and find the .wlac file. Then click the Add button.
9. The License Manager appears, as well as a message that informs you that the license has been successfully activated. Click the OK button to exit the License Manager. You may now use your WISE Software application.

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Activate a Hardkey License

A hardkey license is a single software license, which is tied to a piece of hardware (commonly called a "key" or "dongle"). You attach the hardkey to the USB port of your computer, and an activation code enables the license.

You can use the software on any computer that the hardkey is attached to. However, the first time you install the software on any computer, you must perform the following procedure in order to enable the license.

1. Setting up a license that uses a hardkey requires a Hardkey installation of GerbTool. When software installation is complete, attach your hardware key to your USB port.
2. In your Windows Start menu, select Programs>WISE Software>License Manager. The WISE License Manager window appears.
3. Click the Advanced tab. Check the Computer Information section to make sure your key is being seen by the software. There should be a line that begins with "FLEXID=" that contains your key number. If your key is seen, proceed to the next step.

 If your key is not seen make sure that the key is firmly attached to your USB port. If you continue to have problems, contact WISE Software technical support at tech@wssi.com or 1-503-554-8855.

⚠ *The Activation Code for hardkey devices is normally e-mailed to you automatically after a license is shipped. If you have already received the .wlac file by e-mail, skip steps 4 through 8.*

4. If your key is recognized, complete the Registration Information at the top of the Request page. The software product name and version, as well as your name, e-mail address, serial number, phone, and fax are required to receive an Activation Code. If you have any additional information that you would like to add to the license request, type it in the Notes field.
5. Press the Send Request button. The Choose Method dialog box appears.
6. Using the Method options, indicate whether you would like your license request sent to the default printer, sent directly to WISE Software by e-mail, or saved to a Text file.

 If you cannot send your request or receive the Activation Code by e-mail, please contact WISE Software technical support at 1-503-554-8855 for instructions.
7. If you save to a text file, type the path and name for the .txt file in the Filename text box. You can use the browse button to open a Windows file selection dialog box and search for a folder.
8. Click OK to send your request, and a confirmation message appears.

 If you sent the request by e-mail, you are finished. If you experience any problems sending your request using this method, we recommend saving the request to a text file and sending it as an e-mail attachment.

 If you saved the request to a .txt file, you can attach the file to an e-mail message addressed to licenses@wssi.com.
9. WISE will send an e-mail reply with the Activation Code as a .wlac file attachment. Double-click on the .wlac file in the e-mail. If your e-mail program asks you what you wish to do with the file, tell it to open the file.

 If you experience any problems when you double-click on the attachment, try saving the attachment to a folder. Then open the License Manager and select the Activation tab. Click the Browse button next to the Filename text box, and find the .wlac file. Then click the Add button.
10. The License Manager appears, as well as a message that informs you that the license has been successfully activated. Click the OK button to exit the License Manager. You may now open the GerbTool application (Start>Programs>WISE Software>GerbTool 15.0>GerbTool).

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Activate a Network License

License Server Setup

To install a network license, you must first set up a license server to control the WISE Software licenses. After setting up the server, the software must be installed on the individual workstations, or "clients."

We recommend that an experienced Network Administrator perform the license server setup. You must have administrator privileges on your server in order to complete these instructions.

The network must run TCP/IP for WISE Software network licensing to function properly.

Standard License Server Setup

1. Setting up a typical network license server requires a Network Server Installation. During the installation process, you have the option of whether to install the actual software program on your server. This is useful for testing whether the license is functional later.

 If your network license utilizes a hardkey device for the server, you should select the Hardkey feature during the installation process. See the section below, *Using a Hardkey on the Server*, for additional details.
2. In your Windows Start menu, select Programs>WISE Software>License Manager. The WISE License Manager window appears.
3. Click the Advanced tab. Select the License Server option and specify the server port. The default port is 7788. The recommended secondary port is 8855. If in doubt, leave this value as it is. Click the Apply button.
4. Complete the Registration Info at the top of the Request page. The software product name and version, as well as your name, e-mail address, serial number, phone, and fax are required to receive an Activation Code. If you have any comments or additional information that you would like to add to the license request form, type it in the Notes field.
5. Press the Send Request button. The Choose Method dialog box appears.
6. Using the Method options, indicate whether you would like your license request sent to your default Printer, sent directly to WISE Software by e-mail, or saved to a Text file.

 If you cannot send your request or receive the Activation Code by e-mail, please contact WISE Software technical support at 1-503-554-8855 for instructions.
7. If you save to a text file, type the path and name for the .txt file in the Filename text box. You can use the browse button to open a Windows file selection dialog box and search for a folder.
8. Click OK to send your request, and a confirmation message appears.

 If you sent the request by e-mail, you are finished. If you experience any problems sending your request using this method, we recommend saving the request to a text file and sending it as an e-mail attachment.

 If you saved the request to a .txt file, you can attach the file to an e-mail message addressed to licenses@wssi.com.
9. WISE will send an e-mail reply with the Activation Code as a .wlac file attachment. Double-click on the .wlac file in the e-mail. If your e-mail program asks you what you wish to do with the file, tell it to open the file.

 If you experience any problems when you double-click on the attachment, try saving the attachment to a folder. Then open the License Manager and select the Activation tab. Click the Browse button next to the Filename text box, and find the .wlac file. Then click the Add button.
10. The License Manager appears, as well as a message that informs you that the license has been successfully activated. Click the OK button to exit the License Manager.
11. Open the FLEXlm LMTOOLS program (Start>Programs>WISE Software>FlexLM>LMTOOLS).
12. In the LMTOOLS dialog box, click the Config Services tab. Type **WISE Software** in the Service Name box.
13. Specify the following paths in the appropriate boxes (if your Program Files folder is located in a drive other than C, substitute the drive letter as appropriate):

 Path to the lmgrd.exe file: **C:\Program Files\WISE Software Solutions\License\lmgrd.exe**

 Path to the license file: **C:\Program Files\WISE Software Solutions\License\Wise03.lic**

 Path to the debug log file: **C:\Program Files\WISE Software Solutions\License\debug.log**
14. If you are running Windows NT, 2000, or XP, select the Use Services and Start Server At Power Up options.
15. Click the Save Service button.

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16. Select the Start/Stop/Reread tab. If this is the first time you have installed a WISE Software license on this server, click the Start Server button. If you are upgrading a WISE Software license from a previous version, click the Reread button.
17. If you installed the program on the server, start GerbTool to ensure that it is running properly (Start>Programs>WISE Software>GerbTool 15.0>GerbTool). Otherwise, you will have to test the license after you install the application on a client computer.

You must now set up all the client computers on your network to access the license. See *Client Setup*.

Using a Hardkey on the Server

If you ordered your network license with a hardkey to manage the licenses on your server, use the following instructions to setup your server.

1. Setting up a network license server with a hardkey requires a Network Server installation of the application. During the installation process, after you select the Network Server setup, a list of features is presented to you. In addition to the Network License Server and License Manager options, select the Hardkey option. (The Program feature is optional, if you want to be able to run the actual software application on the server. That is useful for testing whether the license is functional later.)
2. After the software is installed, attach your hardware key to your USB port.
3. In your Windows Start menu, select Programs>WISE Software>License Manager. The License Manager window appears.

⚠ *The Activation Code for hardkey devices is normally e-mailed to you automatically after a license is shipped. If you have already received the .wlac file by e-mail, skip steps 4 through 8.*

4. In the License Manager, complete the Registration Info at the top of the Request page. The software product name and version, as well as your name, e-mail address, serial number, phone, and fax are required to receive an Activation Code. If you have any comments or additional information that you would like to add to the license request form, type it in the Notes field.
5. Press the Send Request button. The Choose Method dialog box appears.
6. Using the Method options, indicate whether you would like your license request sent directly to WISE Software by e-mail, or saved to a Text file.

 If you cannot send your request or receive the Activation Code by e-mail, please contact WISE Software technical support at 1-503-554-8855 for instructions.
7. If you save to a text file, type the path and name for the .txt file in the Filename text box. You can use the browse button to open a Windows file selection dialog box and search for a folder.
8. Click OK to send your request, and a confirmation message appears.

 If you sent the request by e-mail, you are finished. If you experience any problems sending your request using this method, we recommend saving the request to a text file and sending it as an e-mail attachment.

 If you saved the request to a .txt file, you can attach the file to an e-mail message addressed to licenses@wssi.com.
9. WISE will send an e-mail reply with the Activation Code as a .wlac file attachment. Double-click on the .wlac file in the e-mail. If your e-mail program asks you what you wish to do with the file, tell it to open the file.

 If you experience any problems when you double-click on the attachment, try saving the attachment to a folder. Then open the License Manager and select the Activation tab. Click the Browse button next to the Filename text box, and find the .wlac file. Then click the Add button.
10. The WISE License Manager appears, as well as a message that informs you that the license has been successfully activated. Click the OK button and the License Manager closes.

 If you experience any problems when you double-click on the attachment, try saving the attachment to a folder. Then open the License Manager and select the Activation tab. Click the Browse button next to the Filename text box, and find the .wlac file. Then click the Add button.
11. Open the License Manager again, and click the Advanced tab. Select the License Server option and specify the server port. The default port is 7788. The recommended secondary port is 8855. If in doubt, leave this value as it is. Click the Apply button.
12. Click the Close button to exit the WISE License Manager.
13. Open the FLEXlm LMTOOLS program (Start>Programs>WISE Software>FlexLM>LMTOOLS).
14. In the LMTOOLS dialog box, click the Config Services tab. Type **WISE Software** in the Service Name box.

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15. Specify the following paths in the appropriate boxes (if your Program Files folder is located in a drive other than C, substitute the drive letter as appropriate):

 Path to the lmgrd.exe file: **C:\Program Files\WISE Software Solutions\License\lmgrd.exe**

 Path to the license file: **C:\Program Files\WISE Software Solutions\License\Wise03.lic**

 Path to the debug log file: **C:\Program Files\WISE Software Solutions\License\debug.log**

16. If you are running Windows NT, 2000, or XP, select the Use Services and Start Server At Power Up options.
17. Click the Save Service button.
18. Select the Start/Stop/Reread tab and click on the Start Server button.
19. If you installed the program on the server, start GerbTool to ensure that it is running properly (Start>Programs>WISE Software>GerbTool 15.0>GerbTool). Otherwise, you will have to test the license after you install the application on a client computer.

You must now set up all the client computers on your network to access the license.

Client Setup

In order to set up a client computer to access a WISE Software floating license, perform the following steps.

1. Perform a Nodelocked/Network Client installation of the software on the client computer.
2. In your Windows Start menu, select Programs>WISE Software>License Manager. The WISE License Manager window appears.
3. Select the Advanced tab.
4. Select User Node from the Node Type settings.
5. The Server Name and Port number must match the server's settings exactly.
6. Click the Apply button. The license file is created using the specified settings and will point the client to the server. Following is a sample file:

   ```
   SERVER "server name" ANY 7788
   USE_SERVER
   ```

7. Click the Close button to exit the License Manager. You may now open the application (Start>Programs>WISE Software>GerbTool 15.0>GerbTool).

⚠ *The software is designed to run on static IP addresses with associated hostnames. If the server is not being seen, the server may not have been mapped to an IP address at the client. In that case, there is a file called lmhosts.sam, which maps the server name to an address at the client. You can find the file using the Windows file search function, and it contains instructions on how to add new mappings of IP addresses to computer names.*

License Allocation Options

It is possible to limit the product level that a client can access on your server or reserve a copy for a client, or create other options for license allocation. For example, you have a 2-user GT-Viewer license and a 3-user GT-Designer license. John Doe needs to always have a copy of GT-Designer available. You can reserve one for him. The following procedure shows what you need to do to accomplish this.

1. On the license server, use a text editor to create an Options file with the following text:

   ```
   RESERVE 1 gt-dsn USER JDoe
   ```

2. Save the file as **Wise03.opt**, in the same folder as your Wise03.lic file. By default, it is located in **Program Files\WISE Software Solutions\License.**

 Note that the name of the options file must match the vendor daemon name, with the extension .opt. The daemon will automatically read the options file at startup, if it is configured correctly.

In the following example, a company has a network license for GT-Viewer and GT-Designer. The Options file excludes 3 individuals from using the GT-Designer product, and the information regarding that transaction is not logged. All users can access the GT-Viewer licenses, but they do not need to be listed.

```
EXCLUDE gt-dsn USER RSmith
EXCLUDE gt-dsn USER AJones
EXCLUDE gt-dsn USER DMiller
NOLOG QUEUED
```

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WISE Software Feature Names

vcam is the VisualCAM product
gt-dsn is the GT-Designer product.
gt-ins is the GT-Inspector product.
gt-com is the GT-Communicator product.
gt-vwr is the GT-Viewer product.

Options File Syntax

The following is a list of the OPTIONS available to use in your Options file. A brief description is included, as well as the syntax. Everything in the options file is case sensitive. Be sure user names and feature names are entered correctly. You can also include comments in your Options file by starting each comment line with "#".

`EXCLUDE featurename type name`

Excludes a user, host, display or group from the list of who is allowed to use the feature. Excluded users will not be allowed to use the feature.

featurename - name of the feature being affected
type - one of USER, HOST, DISPLAY, GROUP or HOST_GROUP.
name - name of the user or group to exclude

To exclude the user AChan from the list of those able to use the feature gt-com:

```
EXCLUDE gt-com USER AChan
```

`EXCLUDEALL type name`

Excludes a user, host, display or group from the list of who is allowed to use all features served by this vendor daemon (Wise03.exe).

type - one of USER, HOST, DISPLAY, GROUP or HOST_GROUP.
name - name of the user or group to exclude

To exclude any user on the server "chaos" from using all features served by Wise03.exe:

```
EXCLUDEALL HOST chaos
```

`GROUP groupname usernamelist`
`HOST_GROUP groupname hostnamelist`

Defines a group of users/hosts for use in INCLUDE, INCLUDEALL, EXCLUDE, EXCLUDEALL, AND RESERVE options lines.

groupname - name of the group being defined
usernamelist - list of user names in that group

To define the user group Engineers consisting of MBurns, JHowe, and AJames:

```
GROUP Engineers MBurns JHowe AJames
```

To define the host group engineers consisting of node_a, node_b, and node_c:

```
HOST_GROUP engineers node_a node_b node_c
```

`INCLUDE featurename type name`

Includes a user, host, display, or group in the list of who is allowed to use the feature. Anyone *not* in an INCLUDE statement will not be allowed to use that feature.

featurename - name of the feature being affected
type - one of USER, HOST, DISPLAY, GROUP or HOST_GROUP.
name - name of the user or group to include

To include user "MRoberts" in the list of users able to use gt-vwr:

```
INCLUDE gt-vwr USER MRoberts
```

`INCLUDEALL type name`

Includes a user, host, display, or group in the list of who is allowed to use all features served by Wise03.exe. Anyone not in an INCLUDEALL statement will not be allowed to use these features.

type - one of USER, HOST, DISPLAY, GROUP or HOST_GROUP.
name - name of the user or group to include

To allow the user "KDean" to use all features served by Wise02.exe:

```
INCLUDEALL USER KDean
```

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NOLOG what

Turns off logging of specific events by the FLEXlm daemons. Administrators might use this option to reduce the size of the lmgrd or debug.log file.

what - what to turn off: one of IN, OUT, DENIED, OR QUEUED

To turn off logging of check-ins:

```
NOLOG IN
```

To turn off logging of check-outs and queued requests two separate NOLOG lines are required:

```
NOLOG DENIED
NOLOG QUEUED
```

REPORTLOG

Specifies that a log file be written suitable for use by the FLEXadmin End-User Administration Tool. (You set up a log in C:\Program Files\WISE Software Solutions\License\debug.log when you did the installation of GerbTool.) It is a great diagnostic help when determining who is using the tool or what is happening when you attempt to access the Wise03.lic file.

RESERVE numlic featurename type name

Reserves licenses for a specific user. Any licenses reserved for a user are dedicated to that user. Even when the user is not actively using the license it will be unavailable to other users.

numlic - number of licenses to reserve
featurename - name of feature to reserve
type - one of USER, HOST, DISPLAY, GROUP or HOST_GROUP.
name -name of the user or group to reserve licenses for.

To reserve one license of Designer (gt-dsn) for user "JDoe"

```
RESERVE 1 gt-dsn USER JDoe
```

Rules of Precedence in Option.dat Files

INCLUDE and EXCLUDE statements can be combined in the same options file and control access to the same features. When doing so, you will need to refer to the following rules of precedence:

- If there is only an EXCLUDE list, everyone who is not on the list will be allowed to use the feature.
- If there is only an INCLUDE list, only those users on the list will be allowed to use the feature.
- If neither list exists, then everyone is allowed to use the feature.
- The EXCLUDE list is checked before the INCLUDE list; so someone who is on both lists will not be allowed to use the feature.

Once you create an INCLUDE or EXCLUDE list everyone else is implicitly "outside" the group. This feature allows you, as an administrator, the ability to control licenses without having to explicitly list each user that you wish to allow or deny access to. For example:

```
RESERVE 1 gt-ins USER JDoe
RESERVE 2 gt-dsn HOST ntpc
EXCLUDE gt-dsn USER RWilliams
NOLOG QUEUED
```

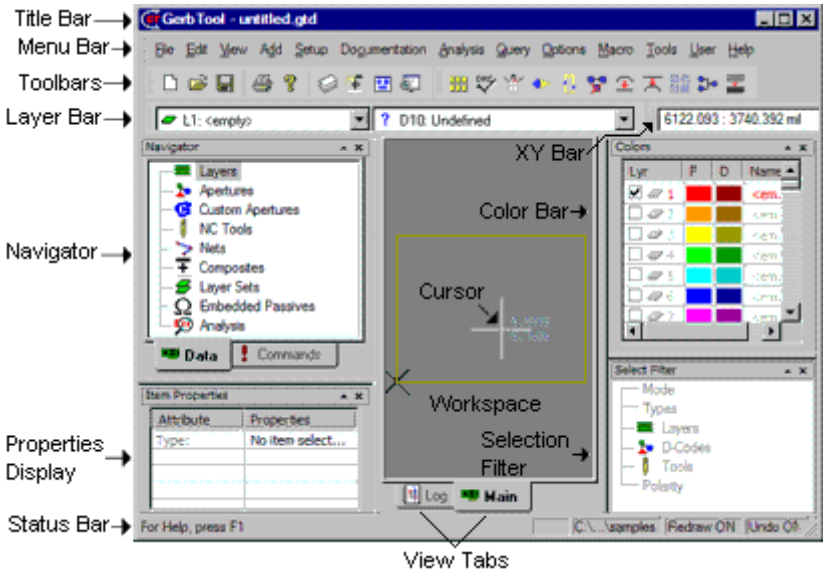
This Options file would:

- Reserve one license of the gt-ins feature for JDoe.
- Reserve 2 licenses of the gt-dsn feature for anyone on a computer with the hostname "ntpc".
- Prevent RWilliams from using the gt-dsn feature on any node on the network.
- Cause QUEUED messages to be omitted from the debug log file.

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Main GerbTool Window

The main GerbTool window, or "desktop", is illustrated below. All toolbars and control bars may be moved to a location you prefer by clicking on the bar and dragging it to a new location. They may be docked to an edge of the GerbTool window, or float in a small window. Most of the items in the window can also be resized or closed so that you can customize the space to suit your needs.



Title Bar

The Title Bar provides the filename of the currently loaded database, and the GerbTool product name. There are three buttons on the right side of the Title Bar:

Clicking the Minimize button reduces the desktop to a button on the Windows task bar.

Clicking the Maximize button makes the desktop fill the entire screen. The button's appearance then changes to an image of two windows (the Restore button). Clicking this restores the window to its previous size.

Clicking the Close button exits the GerbTool program. This functions the same as the File|Exit command.

Menu Bar

To view a menu, position your cursor on the Menu bar, and click on it with the left mouse button. This presents lists of commands that you can execute by clicking on them individually.

Terminating a Command

You may terminate a command, or at least one level of a multi-step command, by pressing the Esc key on your keyboard. You may also right-click and choose Cancel from the right-click shortcut menu. If you would like to terminate a command using the right mouse button, you can disable the right click shortcut menu. (See the Options|Configure command.) Selecting another command from the Menu bar will also terminate any active command. Hotkeys, however, will not terminate an active command.

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Toolbar Button Reference

Each button within the toolbar represents a shortcut to a menu command. When you click on a toolbar button, the command associated with that button is invoked. You can control which toolbars appear in the window with the View|Toolbars command. You can change which button appears in each toolbar by using the Options|Customize Toolbar command.

Drawing Buttons

These buttons are used for working with Drawing layers.

 Documentation|Drawing|Dimensioning|Add Dimension

 Documentation|Drawing|Dimensioning|Delete Dimension

 Documentation|Drawing|Dimensioning|Modify Dimension

 Documentation|Drawing|Dimensioning|Add Line

 Documentation|Drawing|Dimensioning|Delete Line

 Documentation|Drawing|Dimensioning|Modify Line

 Documentation|Drawing|Drill|Add Hole Chart

 Documentation|Drawing|Drill|Delete Hole Chart

 Documentation|Drawing|Drill|Modify Hole Chart

 Documentation|Drawing|Drill|Update Hole Chart

 Documentation|Drawing|Fabrication|Add Note Balloon

 Documentation|Drawing|Fabrication|Delete Note Balloon

 Documentation|Drawing|Fabrication|Modify Note Balloon

Drill Buttons

These buttons are used for working with NC data.

 Add|Drill

 Add|Slot

 Add|NC Circle|Drilled

 Add|Drilled Text

 Add|Mill Path

 Edit|NC|Path Properties

 Edit|NC|Reverse Path Direction

 Edit|NC|Explode

 Add|NC Circle|Milled|CCW Inside

 Add|NC Circle|Milled|CCW Outside

 Add|NC Circle|Milled|CW Inside

 Add|NC Cicle|Milled|CW Outside

 Add|Operator Message

 Edit|NC|Delete|Operator Message

 Edit|NC|Change|Operator Message

 Add|Optional Stop

 Edit|NC|Delete|Optional Stop

 Setup|Break Tabs

 Add|Break Tab

 Edit|NC|Delete|Break Tab

 Edit|NC|Move Break Tab

 Edit|NC|Change|Break Tab

 Edit|Change NC Tools

 Tools|Convert|Gerber to NC

 Tools|NC|Set Order

 Tools|NC|Optimize

 Tools|NC|Display Settings

 Setup|NC Tools

 Documentation|Reports|NC Tools

 File|Export|NC (Drill/Mill)

Edit Buttons

These buttons are used for working with graphics.

 Edit|Undo

 Edit|Redo

 Edit|Copy

 Edit|Move

 Edit|Delete

 Add|Polygon

 Edit|Rotate

 Edit|Mirror

 Edit|Align Layers

 Edit|Clip

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 Add|Flash
 Add|Draw
 Add|Rectangle
 Add|Circle
 Add|Arc Ctr
 Add|Arc 3 Pt
 Add|Array
 Edit|Vertex|Add & Add|Vertex
 Edit|Vertex|Delete
 Edit|Vertex|Move
 Edit|Vertex|Segment Delete
 Add|Text
 Edit|Text

 Edit|Join
 Edit|Origin
 Edit|Scale
 Edit|D-Code|Transcode
 Edit|D-Code|Polarity
 Edit|D-Code|Scale
 Edit|D-Code|Explode Customs
 Edit|Item
 Edit|Select|New Group
 Edit|Select|Add To
 Edit|Select|Remove From
 Edit|Select|Clear
 Edit|Select|Invert

Mainframe Buttons

These buttons are used for working with files, and defining layers and apertures.

 File|New
 File|Open
 File|Save
 File|Print
 Help|About GerbTool

 Setup|Layers
 Setup|Composites
 Setup|Apertures
 Documentation|Reports|Apertures

Query Buttons

These buttons give you quantitative information about specific database items.

 Query|Item
 Query|Net
 Query|User Data
 Query|Embedded Passive & Tools|Embedded Passives|Query
 Query|Highlight

 Query|Measure|Point To Point
 Query|Measure|Edge To Edge
 Query|Measure|Center To Center
 Analysis|Copper Area
 Query|Extents

Redline Buttons

These buttons are used for adding comments and other information which are stored separately from the layer design information.

 Documentation|Redline|View Redlining
 Documentation|Redline|Add Text
 Documentation|Redline|Add Balloon Text
 Documentation|Redline|Add Arrow

 Documentation|Redline|Add Line
 Documentation|Redline|Sketch
 Documentation|Redline|Delete
 Documentation|Redline|Properties

Settings Buttons

These buttons allow you to control display properties and other program settings.

 View|Sketch
 View|Overlay
 View|Composites
 View|Selection Filter
 View|Grid

 Options|Grid Snap
 Options|Arcs 360
 Options|Ortho Line Snap
 Options|Units/Precision

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Tool Buttons

These buttons execute CAM and Analysis utilities.

- Tools|Panelize|Advanced
- Tools|Panalize|Simple
- Analysis|DRC/MRC
- Tools|Snoman
- Tools|Teardrops
- Tools|Fix Silkscreen
- Tools|Pad Removal|Isolated
- Tools|Convert|Arcs To Segmented Arcs
- Tools|Convert|Segmented Arcs To Arcs
- Tools|Layer Spread
- Tools|Netlist|Generate
- Tools|Convert|Drawn Pads|Select Draws
- Tools|Convert|To Custom
- Tools|Convert|Drawn Pads|Automatic

View Buttons

These buttons manipulate your view of the data in the workspace.

- View|Window
- View|Zoom In
- View|Zoom Out
- View|Pan
- View|All (Fit)
- View|Film Box
- View|Redraw

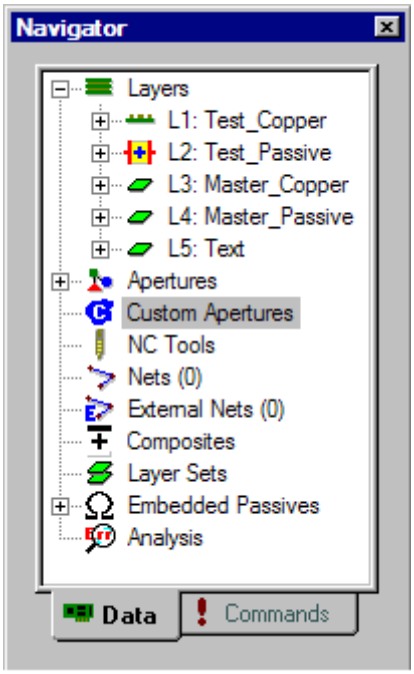
Layer Bar

The Layer Bar displays the active layer on the left. The graphic next to the layer number indicates there is data on the layer, and what type it is. You can make a different layer active by selecting it from this list.

On the right, if the active layer is not an NC layer, the active D-code is displayed. The graphic next to the D-code number shows the shape of each aperture. All custom apertures are signified by an irregular shape with a "C" in the middle (the actual shape is not indicated.) You can make a different D-code active by selecting it from this list.

If the active layer is an NC layer, the active NC tool is displayed. If the Add|Break Tab command is in use, the currently active tab is displayed, with an icon that indicates its type. You can make a different tool or tab active by selecting it from this list.

The Navigator



The Navigator provides a quick-reference list of your database elements, and another way of accessing GerbTool command functions. Most of the Navigator functions, such as changing layer names, adding apertures, and printing analysis reports, are controlled with a right-click shortcut menu.

You can dock the Navigator anywhere in the main GerbTool window by clicking on the top of the Navigator bar and dragging it to another location. You can toggle the view of the Navigator on or off by selecting the View|Navigator command. You can also close the Navigator by clicking on the X in the upper-right corner. You can expand the size of the bar to the entire height of the workspace by clicking the up-arrow; then reduce its size by clicking the down-arrow. While it is docked in the GerbTool window, you can resize the height and width of the bar by moving your cursor to one of its outer edges. When the cursor changes to ⇹, click and hold the left mouse button while you drag the edge to the desired size.

Data Tab

The Data tab provides information about your layers, apertures, NC tools, nets, composites, layer sets and Analysis runs. The information is displayed in a tree format, displaying database elements in an expandable/collapsible hierarchy. To expand an area of the tree, click on the plus box (+ icon) next to the desired database element. The "branches" of the information hierarchy are shown, and the plus box becomes a minus box (- icon). To compress or hide the information, click on the minus box. The information hierarchy for that database element is hidden. If there is no Plus symbol next to a topic in the tree, that type of element does not exist in your design, or has been defined but is not used.

You can edit and delete database elements by right-clicking on the various headings and the branches that are associated with each. This not only provides you with shortcuts to functions available in the main menu, but also some functions unique to the Navigator.

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Commands Tab

The Commands tab provides a shortcut to the main menu commands and macros. The information is displayed in a tree format, with expandable/collapsible lists. By default, the My Commands area contains no functions, the System Commands are structured as they are in the main menu, and the Macros area contains all loaded macros. To expand an area of the tree, click on the plus (+) box next to the desired database element. The "branches" of the information hierarchy are shown, and the plus box becomes a minus (-) box. To compress or hide the information, click on the minus box. If there is no Plus symbol next to a topic in the tree, that area contains no information.

The state of the Commands Tab remains the same regardless of what database is loaded.

Selection Filter

The Selection Filter allows you to define how you want to select items, and what types of items you wish to choose from. For example, depending on the command, you may choose from single item, window, group, or complete layer selections, as well as restricting your selections to particular layers and/or D-codes, etc.

When you are not in a command that uses the Selection Filter, the text in the Selection Filter is gray and you cannot select any options. You also do not have the option of using the View|Selection Filter command or the F hotkey when not in a function that uses the Selection Filter.

You can close the display at any time by clicking on the X in the upper-right corner. If you undock the Selection Filter from the GerbTool window while not in a function that uses it, it will disappear. It will automatically appear again when a function requires it. You can expand the size of the bar to the entire height of the workspace by clicking the up-arrow; then reduce its size by clicking the down-arrow. While it is docked in the GerbTool window, you can resize the height and width of the bar by moving your cursor to one of its outer edges. When the cursor changes to , click and hold the left mouse button while you drag the edge to the desired size.

Mode

These options define how items are selected. The available modes depend upon the function you are in. When you are in Item select mode, a bounding box is added to the cursor. Anything that falls within this bounding box is a potential selection. You can increase the size of the box by pressing the PgUp hotkey, or decrease the size (for increased accuracy) by pressing the PgDn hotkey. If more than one item exists at the point you select, the Choose Selection dialog box appears.

In Window select mode, everything that falls completely within your selection window is selected. In Window +Xing mode, everything inside the selection window, including anything that the window touches, is selected.

In Layer select mode, all selected types of data on all selected layers are chosen.

Types

These options allow you to select which kinds of items will be included. Any type of item not checked will be excluded from selection.

Layers

These options allow you to select which layers will be considered when choosing items.

D-Codes

These options allow you to specify items that are created using only a particular D-code.

Tools

These options allow you to specify drill or mill items that are created using a particular NC tool.

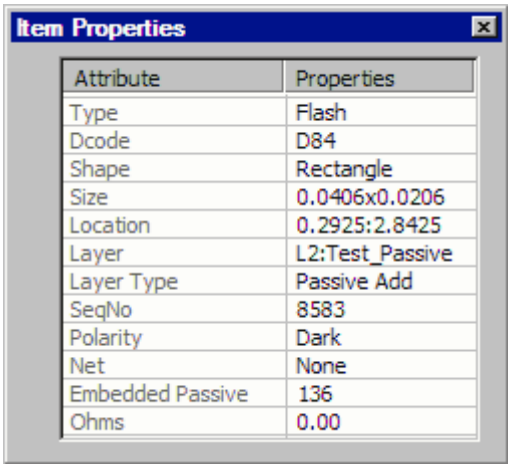
Polarity

These options allow you to specify only items with a particular polarity.

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Item Properties Display

When you query an item in the database, its information is shown in the Item Properties display. The type of information displayed depends upon the item being queried. The information for each item type is detailed below.



You can close the display by clicking on the X in the upper-right corner. It will automatically appear again when a function requires it. You can expand the size of the bar to the entire height of the workspace by clicking the up-arrow; then reduce its size by clicking the down-arrow. While it is docked in the GerbTool window, you can resize the height and width of the bar by moving your cursor to one of its outer edges. When the cursor changes to ⇹, click and hold the left mouse button while you drag the edge to the desired size.

Each Item Type that can be queried is listed below, with all the applicable information that can be provided for it.

Arc

CCW indicates the arc is created in a counter-clockwise direction, CW indicates a clockwise direction.

- **Dcode** The D-code used to create the arc.
- **Shape** The shape of the D-code used.
- **Size** The size of the D-code used.
- **From** The X:Y location where the arc begins.
- **To** The X:Y location where the arc ends.
- **Center** The center point of the arc.
- **Length** The length of the arc.
- **Area** The total square area of the arc.
- **Layer** The layer the item is on
- **Layer Type** The type of layer the item is on.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **Polarity** The polarity of the item, either positive or negative.
- **Net** The net number that the item belongs to (if any).

Block Instance

Also known as "panel images".

- **FilePath** The name of the "master" source file for the panel image.
- **Copies** The number of copies of the image in the panel.
- **Anchor** The location of the anchor point for the image.
- **Location** The X:Y location of the anchor.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.

Draw

- **Dcode** The D-code used to create the draw.
- **Shape** The shape of the D-code used.
- **Size** The size of the D-code used.
- **From** The X:Y location where the draw begins.
- **To** The X:Y location where the draw ends.
- **Length** The length of the draw.
- **Area** The total square area of the draw.
- **Layer** The layer the item is on.
- **Layer Type** The type of layer the item is on.

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- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **Polarity** The polarity of the item, either positive or negative.
- **Net** The net number that the item belongs to (if any).

Drill

- **Tool** The tool number used for the drill hit.
- **Tool Size** The size of the tool used for the drill hit.
- **Plated** "Yes" means the hit is plated, "No" means it is unplated.
- **Location** The X:Y location of the drill hit.
- **Area** The total square area of the drill hit.
- **Layer** The layer the item is on.
- **Layer Type** The type of layer the item is on.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **NC Group** The NC Group number that the drill hit belongs to.
- **Export Order** The drill hit's order number in the drill sequence. If a value of "-1" is shown, then the order is not set (NC optimization has not been run).
- **Net** The net number that the item belongs to (if any).
- **Operator Message** Indicates whether an operator message is displayed to the machine operator before or after the hit is made.
- **Optional Stop** Indicates if the machine is stopped before or after the hit is made.

Drilled Circle

- **Tool** The tool number used for the circle.
- **Tool Size** The size of the tool used for the circle.
- **Plated** "Yes" means the circle is plated, "No" means it is unplated.
- **Center** The X:Y location of the circle's center point.
- **Diameter** The diameter of the circle.
- **Area** The total square area of the circle.
- **Layer** The layer the circle is on.
- **Layer Type** The type of layer the item is on.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **NC Group** The NC Group number that the circle belongs to.
- **Export Order** The circle's order number in the drill sequence. If a value of "-1" is shown, then the order is not set (NC optimization has not been run).
- **Net** The net number that the item belongs to (if any).
- **Operator Message** Indicates if an operator message is displayed to the machine operator before or after the circle is made.
- **Optional Stop** Indicates if the machine is stopped before or after the circle is made.

Drilled Text

- **Tool** The tool number for the text being queried.
- **Tool Size** The size of the tool used for the text.
- **Plated** "Yes" means the text is plated, "No" means it is unplated.
- **Location** The X:Y location of the insertion point of the text (usually the lower-left corner of the first letter).
- **Text** The letters/numbers used in the text itself.
- **Orientation** The orientation of the line of text: Horizontal or Vertical.
- **Area** The total square area of the text.
- **Layer** The layer the text is on.

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- **Layer Type** The type of layer the text is on.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **NC Group** The NC Group number that the text belongs to.
- **Export Order** The text's order number in the drill sequence. If a value of "-1" is shown, then the order is not set (NC optimization has not been run).
- **Net** The net number that the item belongs to (if any).
- **Operator Message** Indicates if an operator message is displayed to the machine operator before or after the text is made.
- **Optional Stop** Indicates if the machine is stopped before or after the text is made.

Flash

- **Dcode** The D-code used to create the flash.
- **Shape** The shape of the D-code used.
- **Size** The size of the D-code used.
- **Location** The location of the item, in X:Y coordinates.
- **Area** The total square area of the flash.
- **Layer** The layer the item is on.
- **Layer Type** The type of layer the item is on.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **Polarity** The polarity of the item, either positive or negative.
- **Net** The net number that the item belongs to (if any).
- **Embedded Passive** If the item is part of an embedded passive, this shows whether it is a termination bar or resistor. If it is a resistor, the reference designator is given.
- **Ohms** If you query an embedded passive resistor, this is the resistance value.

Mill Circle

- **Tool** The tool number for the circle.
- **Tool Size** The size of the tool used for the circle.
- **Plated** "Yes" means the circle is plated, "No" means it is unplated.
- **Center** The X:Y location of the circle's center point.
- **Diameter** The diameter of the circle.
- **Area** The total square area of the circle.
- **Layer** The layer the circle is on.
- **Layer Type** The type of layer the circle is on.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **Feed Rate** The feed rate of the mill tool.
- **Side** Whether the circle is cut on the Inside or Outside of the radius.
- **Direction** Whether the circle is milled in a Clockwise or Counter-Clockwise direction.
- **Length** The distance the mill tool has to travel to create the circle.
- **NC Group** The NC Group number that the circle belongs to.
- **Export Order** The circle's order number in the mill sequence. If a value of "-1" is shown, then the order is not set (NC optimization has not been run).
- **Operator Message** Indicates if an operator message is displayed to the machine operator before or after the circle is made.
- **Optional Stop** Indicates if the machine is stopped before or after the circle is made.

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Mill Path

- **Tool** The number of the mill tool used.
- **Tool Size** The size of the tool used.
- **Plated** "Yes" means the path is plated, "No" means it is unplated.
- **Location** The X:Y location where the path begins.
- **Area** The total square area of the draw.
- **Layer** The layer the item queried is on.
- **Layer Type** The type of layer the item is on.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **Compensation** The side of the mill path (as determined by its direction) that compensation was applied to.
- **Feed Rate** The feed rate of the mill tool.
- **Overshoot** The amount added to the last segment of the mill path.
- **Segments** The number of segments in the mill path.
- **Length** The exact distance a mill tool would have to cut to create the path. Any spaces in the mill path created by break tabs are not included in this; however any "legs" from crown breaks are factored in.
- **NC Group** The NC Group number that the path belongs to.
- **Export Order** The path's order number in the mill sequence. If a value of "-1" is shown, then the order is not set (NC optimization has not been run).
- **Operator Message** Indicates if an operator message is displayed to the machine operator before or after the path is made.
- **Optional Stop** Indicates if the machine is stopped before or after the path is made.

Polygon

Only raster polygons are identified as "Polygon". Vector polygons are identified by their individual draws.

- **From** The X:Y location where the polygon border begins.
- **To** The X:Y location where the polygon border ends (always the same as the beginning).
- **Closest Pt** The closest vertex point to the coordinate selected when you queried the polygon.
- **Num Pts** The number of points on the polygon border.
- **Area** The square area of the entire polygon.
- **Layer** The layer the polygon is on.
- **Layer Type** The type of layer the polygon is on.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **Polarity** The polarity of the polygon, either positive (Dark) or negative (Clear).
- **Net** The net number that the item belongs to (if any).

Polyline

Polylines are contiguous lines made of multiple draws.

- **Dcode** The D-code used to create the polyline.
- **Shape** The shape of the D-code used.
- **Size** The size of the D-code used.
- **From** The X:Y location where the polyline begins
- **To** The X:Y location where the polyline ends.
- **Closest Pt** The closest start/end point of the draw within the polyline to the coordinate that you queried.
- **Num Pts** The number of draw start/end points within the polyline.
- **Length** The length of the polyline.
- **Area** The total square area of the polyline.
- **Layer** The layer the polyline is on.
- **Layer Type** The type of layer the polyline is on.

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- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **Polarity** The polarity of the polyline, either positive (Dark) or negative (Clear).
- **Net** The net number that the item belongs to (if any).

Slot

- **Tool** The tool number for the slot.
- **Tool Size** The size of the tool used for the slot.
- **Plated** "Yes" means the slot is plated, "No" means it is unplated.
- **From** The X:Y location where the slot begins.
- **To** The X:Y location where the slot ends.
- **Length** The length of the slot.
- **Area** The total square area of the slot.
- **Layer** The layer the item is on.
- **Layer Type** The type of layer the item is on.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **NC Group** The NC Group number that the slot belongs to.
- **Export Order** The slot's order number in the drill sequence. If a value of "-1" is returned, then the order has not been set (NC optimization has not been run).
- **Net** The net number that the item belongs to (if any).
- **Operator Message** Indicates if an operator message is displayed to the machine operator before or after the slot is made.
- **Optional Stop** Indicates if the machine is stopped before or after the slot is made.

Text

If the text is created with a font other than "GerbTool-Stroke", the font is noted in the Type field.

- **Dcode** The D-code used to create the text.
- **Shape** The shape of the D-code used.
- **Size** The size of the D-code used.
- **Location** The X:Y location where the text begins.
- **Area** The total square area of the text.
- **Layer** The layer the item queried is on.
- **Layer Type** The type of layer the item is on.
- **SeqNo** The item's order in the Gerber database. Item 1 is the first item listed in the Gerber file, item 2 is the second, etc.
- **Polarity** The polarity of the text, either positive (Dark) or negative (Clear).
- **Net** The net number that the item belongs to (if any).

Status Bar

The Status Bar, at the bottom of the desktop, provides specific command instructions and feedback. During certain commands, such as those where you are converting one type of data item to another, an Enable/Disable Prompts button appears on the left side. Disabling Prompts will prevent confirmation message boxes from appearing, after you select an item -- the data are converted immediately after selection.

Other useful information is also displayed on the right side of the status bar, in the following order:

Database Modified Indicator

"MOD" appears if you have made any modifications to the currently loaded database.

Current Folder

The directory path of the currently loaded database is displayed.

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Redraw Status
Automatic redraws of the workspace can be turned off, using the Options|Configure command. When you select the Minimize Redraws option, you control when the workspace is refreshed, by pressing the R hotkey.

Undo Status
The Undo command allows you to reverse edits that you have just made. As useful as this is, the Undo memory buffer can consume memory and affect system performance. You can disable the Undo function using the Options|Configure command.

DRC Status
The number of existing Analysis errors is shown.

Select Group
The number of items in the current Select Group (Sel) is shown.

Units of Measure
The current units of measure are displayed.

Process Indicator
The process indicator light, in the lower-right corner of the desktop, tells you if the system is currently processing data. If the light is flashing red, GerbTool is currently processing data. When the light is solid green, GerbTool is not processing data. If the light is solid red (not flashing), a system error has occurred and GerbTool is unable to process data.

Workspace
The Workspace is where the graphical representation of your database appears. The commands in the Menu Bar (and their associated toolbar buttons) control your view of the workspace and allow you to edit the data. You can change the background color of the workspace using the Options|Configure command.

Anytime GerbTool is redrawing the display or highlighting a window of data, you may halt the drawing process by pressing the Esc key. This will not effect the operation of a command, and in many cases will speed up the operation of a command. If you would like to terminate a redraw using the right mouse button, you must disable the right-click shortcut menu.

Grid
A grid can be displayed in the workspace, by selecting the View|Grid command. The size of the grid, as well as the units of measure used for your database, can also be controlled using the Options|Configure command.

View Tabs
At the bottom of the Workspace are View Tabs. The default tabs are Log and Main. Log shows a record of all your actions since you opened or created a database, and is cleared when you select the File|New or File|Open command. To save the log as a file, right-click in the Log screen and select Save Log from the shortcut menu, or select the File|Save Log command. Main shows the graphical display of your database.

You can add additional tabs, maintaining one view of your database in each, so that you are not required to frequently zoom and pan your view. You can perform edits, such as copy data, from one view to another. You can also delete tabs which you have added.

Cursor
The cursor, or "cross hair", is used to select objects, commands, buttons, etc. in the workspace. Moving your mouse moves the cursor accordingly. There are several ways that you can modify the behavior of the cursor, using hotkeys and the Options|Configure command.

Each mouse button has a unique function, which can be customized. By default, coordinates showing the current location of the cursor are attached to it. You can turn off this display, as well as change the size of the cursor.

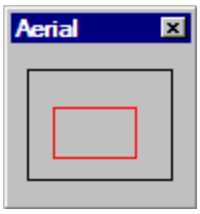
Film Box
The film box shows the extents of your film. The film size, as well as its display color, are stored in your saved .gtd files, and can be changed using the Options|Configure command.

The View|Film Box command allows you to quickly zoom so that the extents of the film box are displayed in the workspace.

XY Bar
This toolbar shows the X and Y coordinates of your cursor in the workspace. The Abs and Rel buttons allow you to change the coordinates to Absolute or Relative. These buttons are available when you are in one of the Edit or Add functions.

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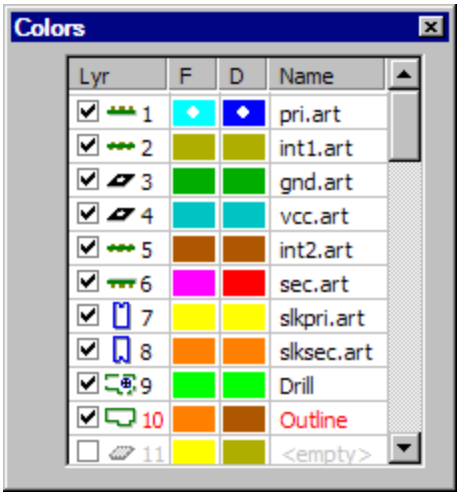
Aerial Bar



The Aerial view allows you to tell, at a glance, exactly where your current view window is located in reference to your data. The red rectangle represents your current view (what appears in the workspace), and the black rectangle represents the database extents. You can close the Aerial bar by clicking on the X in the upper-right corner. You can expand the size of the bar to the entire height of the workspace by clicking the up-arrow; then reduce its size by clicking the down-arrow. While it is docked in the GerbTool window, you can resize the height and width of the bar by moving your cursor to one of its outer edges. When the cursor changes to ⇹, click and hold the left mouse button while you drag the edge to the desired size.

Color Bar

The Color Bar is available at all times to change active layer, layer colors and visibility. Layer names are also presented for your reference, and layer types are represented by the icon next to the layer number. Following is a list of icons and the layer type they represent.



- Top
- Inner
- Bottom
- Plane
- Silk Bottom
- Silk Top
- Mask Top
- Mask Bottom
- Paste Top
- Paste Bottom
- Border
- NC (Drill/Mill)
- Composite
- Drawing
- Insulator
- Etch (Subtractive) Passive
- Screen (Additive) Passive
- External Netlist (can only be set by GerbTool after importing a netlist)
- Other

If a layer contains item-level polarity, the Draw and Flash colors contain a diamond shape, as shown for layer 1 in the above illustration.

If you wish to change a layer name or type, use the Layer table or Navigator. You can close the Color Bar by clicking on the X in the upper-right corner. You can expand the size of the bar to the entire height of the workspace by clicking the up-arrow; then reduce its size by clicking the down-arrow. While it is docked in the GerbTool window, you can resize the height and width of the bar by moving your cursor to one of its outer edges. When the cursor changes to ⇹, click and hold the left mouse button while you drag the edge to the desired size.

Visibility

Visibility for individual layers, layer sets and composites is controlled by clicking in the check box next to the desired layer number. A check mark indicates visibility, in which state a layer can be edited; no check mark indicates the layer is not visible, and cannot be edited.

To turn all layers on or off, right-click in the Color Bar, and select either All On or All Off. When you select All Off, all layers except the active layer are turned off.

Setting the Active layer

Double-clicking on a layer number makes the layer "active". You can also right-click on the desired layer in the Color Bar, and select Set Active from the shortcut menu. The active layer appears on top of the other layers in the workspace (this does not change the actual layer order).

The active layer can also be set using the Layer Bar.

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Color Selector



You can control the color of flashes and draws for each of your layers. To change one of the colors, click on it. The Color Selector appears, and you can select your desired color from the available selection. To change the color choice at a particular location in the Color Selector, right-click on the desired color. This opens the standard Windows color selector that allows you to define a color.

To dismiss the Color Selector without choosing a color, press the Esc key.

If you have a specific set of layer colors you would like to use for all your designs, you are provided with a file in the Macros folder called demo.mac, which includes a macro called SetLayerColors. Use the following steps to utilize this macro.

1. Open the demo.mac file the Macro Developer, and edit it to specify your desired colors. Save the file and return to the main GerbTool window.
2. Select the Macro|Load command and load the demo.mac file.
3. Select the Macro|Run command, and run the SetLayerColors macro.

⚠ *If you wish to run the SetLayerColors macro automatically when GerbTool starts, rename it to OnStartup. To run it whenever you select the File|Open command, rename it to OnOpen.*

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Hotkeys

Hotkeys (also known as "nested commands") are available anytime GerbTool has prompted you to enter a point or is idle. All hotkeys are executed immediately without affecting the current command. Some hotkeys are a toggle, which means that pressing the key will turn a mode on or off. When a hotkey has an equivalent menu command, it is indicated. Equivalents for most hotkeys are also available through a right-click, context sensitive, shortcut menu, if enabled.

Key	Command	Key	Command
1-9,0	Bring layer (1-10) to top	**O or -**	View\|Zoom Out
Ctrl+1-9,0	Bring layer (11-20) to top	**Ctrl+O**	File\|Open
A	Turn on all layers	**P**	View\|Pan
Ctrl+A	Turn on only active layer	**Ctrl+P**	Toggle Autopan mode
Shift+A	Setup\|Apertures	**Ctrl+Alt+Q**	Exit without confirmation
B	Toggle View\|Backside	**Q**	Query\|Item
Shift+B	Setup\|Layer Sets\|Blind/Buried	**R**	View\|Redraw
C	Enter absolute coordinates	**Ctrl+R**	View\|All
Ctrl+C	Enter relative coordinates	**S**	Toggle Options\|Grid Snap
D	Increment current D-code/tool	**Ctrl+S**	File\|Save
Ctrl+D	Decrement current D-code/tool	**T**	Toggle tool path view
F	View\|Selection Filter	**Shift+T**	Setup\|NC Tools
Ctrl+F	Edit configuration flags	**U**	Undo last edit
G	Toggle View\|Grid	**Ctrl+U**	Undo all edits
Ctrl+G	Edit grid settings	**Shift+U**	Reverse last undo (Redo)
H	Toggle View\|Highlights	**V**	Toggle View\|Composites
I or +	View\|Zoom In	**Ctrl+V**	Toggle View\|Virtual Panel
Ctrl+I	Copy workspace to Clipboard	**Y**	Setup\|Layers
L	Increment active layer	**Esc**	End current function
Ctrl+L	Decrement active layer	**Enter**	Enter coordinate at cursor location
Shift+L	Setup\|Layer Sets\|View/Edit	**Home**	Snap cursor to item center
M	Macro\|Run	**Ctrl+Home**	Snap cursor to item center & show Absolute Coordinates box
Ctrl+M	Options\|Units/Precision	**PgUp**	Increase cursor bounding box
N	Toggle active layer display positive/negative	**PgDn**	Decrease cursor bounding box
Ctrl+N	File\|New	**←→↑↓**	Scroll left, right, up, and down

GerbTool also offers competitive product hotkey support. If you wish to apply GerbTool functions to the equivalent hotkey used in one of the competitive products listed, you can change the setting using the Options|Configure command. Only the competitive product hotkeys listed below are supported.

GerbTool Function [Hotkey]	CAM350 Hotkey	ViewMaster Hotkey
Bring layer 1-10 to the top [**1-9,0**]	**1-9,0**	*None*
Setup\|Apertures [**Shift+A**]	**A**	**F5**
Snap cursor to center of item [**Home**]	*None*	**A**
Zoom in at current cursor position	**C**	*None*
Set active D-code, by number	**D**	**Shift+D**
Query\|Measure\|Point To Point	*None*	**D**
View\|Sketch	**F**	**Shift+O**
Toggle workspace redraw on/off	**G**	*None*
View\|Grid [**G**]	**V**	**G**
View\|Highlights [**H**]	**H**	*None*
Invert current select group	*None*	**Ctrl+I**
Edit\|Copy	*None*	**K**
Turn layers off, by number (0 = all)	**K**	*None*
Turn layers on, by number (0 = all)	**L**	*None*
Edit\|Move	*None*	**Shift+M**
Toggle active layer display positive/negative [**N**]	**N**	*None*
File\|New	*None*	**Ctrl+N**
Toggle orthogonal snap (0/45/90)	**O**	*None*

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GerbTool Function [Hotkey]	CAM350 Hotkey	ViewMaster Hotkey
File\|Open	*None*	**Ctrl+O**
Zoom to previous position	**P**	*None*
File\|Print	*None*	**Ctrl+P**
Query\|Item [**Q**]	**Q**	**Shift+A**
Edit\|Align Layers	*None*	**Ctrl+Q**
View\|Redraw [**R**]	**R**	**End**
Edit\|Rotate	*None*	**Ctrl+R**
Options\|Grid Snap [**S**]	**S**	*None*
Edit\|Select\|New Group	*None*	**S**
File\|Save	*None*	**Ctrl+S**
View\|Overlay	**T**	*None*
Transcode current item	*None*	**Ctrl+T**
Edit\|Undo [**U**]	**U**	**Ctrl+Z**
Edit\|Redo [**Shift+U**]	**Ctrl+U**	*None*
Edit\|Select\|Clear	*None*	**Ctrl+U**
Zoom by Window (default left mouse button*)	**W**	**Shift+Home**
Edit\|Select\|New Group (Window mode)	*None*	**Ctrl+W**
Edit\|Mirror (Group mode)	*None*	**Shift+X** / **Shift+Y**
Setup\|Layers [**Y**]	**Y**	*None***
Toggle all layers on [**A**]	*None*	**0 / Ctrl+0**
Toggle all layers off, except active [**Ctrl+A**]	*None*	**Shift+0**
Help [**F1**]	**F1**	**F1**
File\|Import\|Gerber	*None*	**F2**
File\|Import\|Import Wizard	*None*	**Ctrl+F2**
Exit program without prompt [**Ctrl+Alt+Q**]	*None*	**Alt+F4**
Setup\|NC Tools [**Shift+T**]	*None*	**Shift+F5**
View\|Zoom In [**+**]	**+**	**PgUp**
View\|Zoom Out [**-**]	**-**	**PgDn**
Make next layer active/visible [**L**]	None	**=**
Make previous layer active [**Ctrl+L**]	*None*	**Backspace**
View extents of all on layers [**Ctrl+R**]	**Home**	**Home**
Pan to cursor location [**P**]	**Ins**	*None*
Edit\|Delete	*None*	**Del**
Increase snap box size [**PgUp**]	**PgUp**	*None*
Decrease snap box size [**PgDn**]	**PgDn**	*None*
End current command [**Esc**]	**Right mouse button*** / **Esc**	**Esc**
Select item	**Spacebar**	**Enter**
Pan left [←]	*None*	**Ctrl+←**
Pan right [→]	*None*	**Ctrl+→**
Pan up [↑]	*None*	**Ctrl+↑**
Pan down [↓]	*None*	**Ctrl+↓**

*To change the default mouse functions, use the Function Key/Mouse Button tab in the Options|Configure command.

**Because the F10 key is reserved by a Windows function, the F10 hotkey from ViewMaster, which opens the Layer Table, cannot be emulated.

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Mouse and Function Key Commands

Mouse Functions

The term "click" refers to the selection of an item, command, or control by placing the mouse cursor over it, then pressing and releasing the left mouse button. If you do not have a command function active, you can use the left mouse button to create a View Window and zoom in on an area of your workspace.

To "double-click" means to perform the above action, but pressing and releasing the left mouse button twice in rapid succession.

The term "right-click" refers to the selection of an item, command, or control by placing the mouse cursor over it, then pressing and releasing the right mouse button. Often, as when you right-click in the main workspace, a shortcut menu appears, allowing you to select a command by clicking on it.

Clicking the middle mouse button in the main GerbTool workspace is the equivalent of the View|Zoom In command.

You can use the Options|Configure command to change the default left, right, and middle mouse button assignments described above.

Function Keys

GerbTool comes pre-configured with the following function key assignments:

Key Assignment

F1 Help
F2 View|Film Box
F3 View|Previous
F4 View|All
F5 Setup|Layers
F6 Setup|Apertures
F7 Documentation|Reports|Apertures
F8 Query|Highlight
F9 Query|Item
F10 Menu
F11 Edit|Select|Add To
F12 Edit|Select|Remove From

You can change any of the default function key assignments listed above, using the Options|Configure command.

See *Hotkeys* for a list of keyboard shortcut keys.

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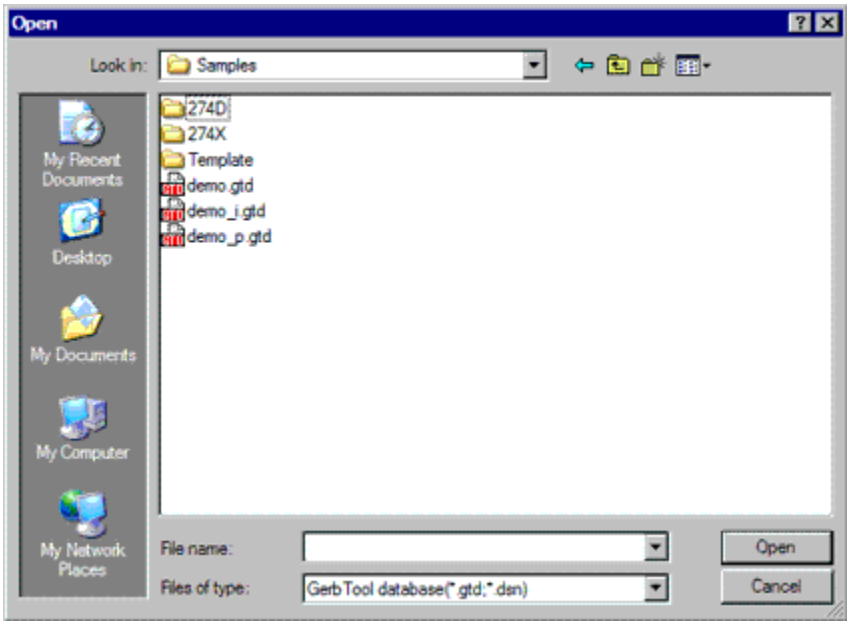
Dialog Boxes

Dialog boxes are used to enter information into GerbTool. They may contain data entry fields, selectable options, color buttons, help buttons, scroll bars and exit buttons (OK, Cancel, and Close).

Most GerbTool dialog boxes have a help button with a question mark located in the title bar. To use this feature, click the help button and then click on a control within the dialog box. A popup window will appear with information specific to that control and dialog box.

File Selection

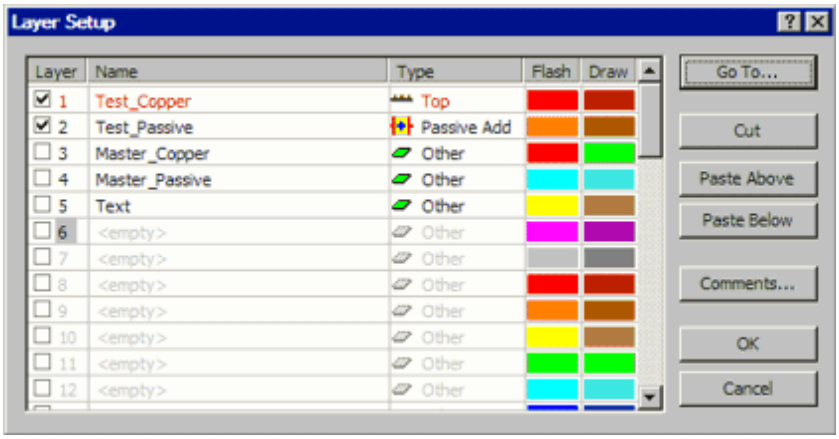
The File Selection dialog box provides a convenient way of locating files so you do not have to remember them all. There are two forms of the File Selection dialog box. The first (below) allows you to select only one filename. You select the desired file by clicking directly on a filename. The chosen filename appears in the File Name field at the bottom of the dialog box.



The second allows you to select multiple filenames by holding down the Ctrl key on your keyboard, and clicking on each desired filename. Each selection remains highlighted, and appears in the File Name field. An example of this type of dialog box is the one used for File|Import|Barco DPF.

Edit Forms

Edit forms are used to enter information into GerbTool. They may contain data entry fields, checkable buttons, color buttons, scroll bars and exit buttons (OK, Cancel, etc.). This type of form is exemplified by the Setup|Layers dialog box, as shown below.



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Accessing Help

In addition to this Help system, there are many ways to obtain more information about using GerbTool.

Most dialog boxes offer context sensitive help, which can be accessed two ways.

- Right-click on any dialog box control. If help is available for it, "What's This" appears next to your cursor. Click on What's This to view information about the control.
- Click on the “?” button in the upper-right corner of the dialog box, then on the dialog box control in question. Explanatory text appears.

The GerbTool web site, http://www.gerbtool.com, offers a support page with documentation in PDF format, FAQ's with video demonstrations, and other helpful information. You can also join the GerbTool User Forum, where you can ask questions and discuss GerbTool with other users.

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Using Files

When you save a database using the GerbTool Save command, all the design data are contained within the single file (any original Gerber files remain untouched and are no longer needed). The File|Open command is used for opening GerbTool database files.

Creating a New Design

To create a new design, select the File|New command. This clears your workspace and allows you to begin a new (and initially untitled) design. You may begin adding data manually or importing files into your design.

When you are ready to save your new design for the first time, GerbTool will prompt you to choose a new filename for your design.

Opening/Importing

Any file that is not a GerbTool (.gtd) database must be imported into GerbTool, using an appropriate command. The following list shows supported file formats, and what command is used to import them. You can find sample files in many of the below formats in the Samples folder of your GerbTool program folder.

The Import Wizard will recognize all of the "importable" files listed below. If you are in doubt about a file's format, the Import Wizard will tell you. If you know you are importing a non-Gerber file, such as a DXF file, we recommend you use the import command specific to that format. (It will save you the time of having to step through the various Import Wizard dialog boxes.)

When importing 274-D Gerber files, external aperture list files are required. GerbTool provides aperture list conversion for most of the popular CAD and photo-plotter aperture list formats in use today. This conversion process will translate a CAD aperture list directly into GerbTool, reducing data entry related problems.

File Type	Import Command
Aperture List	File\|Import\|Import Wizard File\|Import\|Aperture List
Barco	File\|Import\|Barco DPF
CAM350 v7.X or earlier	File\|Import\|CAM350 File\|Open
Custom Aperture Library	Setup\|Apertures /Custom Ap /Load From Lib
DXF (AutoCAD 2000 or earlier)	File\|Import\|DXF
Gerber (274-D, 274-X, Fire9XXX)	File\|Import\|Import Wizard *(recommended)* File\|Import\|Gerber
GerbTool (.gtd)	File\|Open
GerbTool Analysis Rule (.rul)	Analysis\|DRC/MRC /Load
GerbTool NC Tool Table (.nct)	Setup\|NC Tools /Load
GerbTool Report (.txt)	*Any text editor (Notepad, WordPad, etc.)*
HPGL	File\|Import\|HPGL
IPC-2581 (Offspring)	File\|Import\|IPC-2581 (Offspring)
IPC-D-356/A	File\|Import\|Netlist\|IPC-D-356
NC (Drill/Mill)	File\|Import\|Import Wizard File\|Import\|NC (Drill/Mill)
NC (Drill/Mill) Tool List	File\|Import\|NC Tool List
ODB++	File\|Import\|ODB++
ODB++ Netlist	File\|Import\|Netlist\|ODB++
ODB++(X)	File\|Import\|ODB++(X)
ODB++(X) Netlist	File\|Import\|Netlist\|ODB++(X)
PADS PowerPCB ASCII File	File\|Import\|PADS ASCII
PADS PowerPCB ASCII Netlist	File\|Import\|Netlist\|PADS ASCII

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There are also files that are used by GerbTool, but do not need to be imported or opened; you simply need to tell GerbTool where they are located, in case they need to be used. If any of the below files are provided for you in the GerbTool program folder, name of the sub-directory is indicated:

File Type	Command
Aperture List Automatic Conversion Rule (ACR)	Options\|Configure /Ap List Converters. *Several .acr files are provided for you in the ApConv folder.*
DXF Fonts	File\|Import\|DXF. *Several .shx files are provided for you in the DXFFonts folder.*
Macros	Macro\|Load (*execute using* Macro\|Run). *Several Macro (.mac) files are provided for you in the Macros folder.*
NC Tool List Automatic Conversion Rule (ACR)	*Any file placed in the ToolConv folder is automatically detected by* File\|Import\|NC Tool List.
Text Fonts	*The font file used by* Add\|Text *and other text commands is in the Fonts folder.*

Drag-and-Drop 274-X and .gtd Files

All the necessary aperture information is contained within 274-X files, and GerbTool database (.gtd) files contain all the necessary information for an entire design. Because of this, it is a simple task for GerbTool to load these files. GerbTool offers a simple "drag-and-drop" feature for importing 274-X files and opening GerbTool files, allowing you to view your data quickly.

1. Open GerbTool and the Windows File Explorer.
2. In Windows Explorer, find the 274-X or .gtd file you wish to import.
3. Click on the file and hold down your mouse button. Drag the cursor to the GerbTool workspace, and release the mouse button. The data immediately appears in the workspace.

Troubleshooting Gerber Import

The Import Wizard automatically detects the format of your Gerber files, and imports them accordingly. Some issues with importing Gerber data and aperture tables may occur, however, so below are some tips for making sure your data are imported properly.

- Since Gerber files contain only numbers with no decimal point, a number such as X12345 could mean 1.2345 inches, 12.345 inches, or 123.45 inches. If any of your files came in too large or too small, you need to start the import process again and select a more appropriate M.N Format for your files.
- If the M.N setting is correct but a file is still not correctly imported, check to make sure the Zero Suppression setting is correct. Zeros are added to numbers in a file to make sure they fit the required M.N setting. If a number is X01234, and you use 2.3 format but suppress leading zeros, a 1.234 file will import as 12.34.
- If there is an incorrect Coordinate Mode setting, files usually read in as a long jagged line or sunburst. Absolute coordinates are used when the locations refer to a common origin (0,0). Incremental coordinates are when each coordinate is a displacement from the previous. Double-check this setting for any errors.
- Your data may be imported correctly, but the layers are not aligned properly or the origin is set far away from the actual data extents. This is often a problem in Gerber files exported from PADS PowerPCB, which (by default) centers layers based on a page (film) format size, with the origin is based on the lower-left corner of the page. You can fix this by disabling the default setting in PowerPCB. Otherwise use the Edit|Align Layers command to align the layers, and Edit|Origin to change the origin.

Saving/Exporting

The File|Save and File|Save As commands are used to save GerbTool database (.gtd) files. To save to any file format that is not a GerbTool database (such as Gerber), you must use an appropriate Export or Save command. The following list shows supported file formats, and what command is used to export them.

File Type	Export Command
Aperture List	File\|Export\|Aperture List
Aperture Report	Documentation\|Reports\|Apertures /Save
Barco	File\|Export\|Barco DPF
Bitmap	File\|Export\|Bitmap
Custom Aperture	Custom Aperture Editor File\|Save
Custom Aperture Library	Setup\|Apertures /Custom Ap /Save To Lib
DXF (AutoCAD 2000)	File\|Export\|DXF
Gerber (274-D, 274-X, Fire9XXX)	File\|Export\|Gerber

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File Type	Export Command
GerbTool (.gtd)	File\|Save File\|Save As
GerbTool Analysis Rule (.rul)	Analysis\|DRC/MRC /Save
GerbTool NC Tool Table (.nct)	Setup\|NC Tools /Save
GerbTool v8.0 Design	File\|Export\|GerbTool v8
HPGL	File\|Export\|HPGL
IPC-2581 (Offspring)	File\|Export\|IPC-2581 (Offspring)
IPC-D-350	File\|Export\|IPC-D-350
IPC-D-356/A	File\|Export\|IPC-D-356
Macro	Macro Developer File\|Save
NC (Drill/Mill)	File\|Export\|NC (Drill/Mill)
NC (Drill/Mill) Tool List	File\|Export\|NC Tool List
NC (Drill/Mill) Tool Report	Documentaton\|Reports\|NC Tools /Save
Netlist	Tools\|Netlist\|Save
ODB++	File\|Export\|ODB++
ODB++(X)	File\|Export\|ODB++(X)
PostScript	File\|Export\|PostScript